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Inland Navigation Planning Conference

Cincinnati, Ohio

25 May 2006

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Topics

- Setting the R&D agenda – USACE process
- Setting the R&D agenda – the other process
- NETS
- Post – NETS
- What is needed?

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Setting the R&D Agenda USACE Process

- R&D community has a budget of approximately $22 million
- Engineering R&D – generated & supported by an extensive community within the Corps
  - Research community submit proposals - brief
  - Ranking applied by major labs on behalf of the field
  - ERDC labs dominated by engineering functions, dominates research as well [Coastal & Hydraulics, Cold Regions Research & Engineering, Construction Engineering, Environmental, Geotechnical & Structures, Information Technology, and Topographic Engineering]
- Economics has no lab - headquarters planning, IWR economists, IWR nav business line mgr are chief proponents

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Setting the R&D Agenda
The Other Process

- Direct response to intense external pressure -
- Requires intervention by
  1. The press
  2. Stakeholders
  3. The Congress
  4. ASA
  5. Corps policy and decision makers – Army leadership and civilian leadership
- This kind of pressure has relatively short half life, but moves mountains in the short run
- Field-driven research with money
  - $2 million out of the $22 million
  - Past research often dependent on project funds

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NETS Introduction

- Navigation Economic Technologies (NETS) – Keith Hofseth is the director – with IWR [handout]
- NETS - beneficiary of this extraordinary "other" process
  - Major focus on inland navigation, esp. the UMR-IWW and NAS critiques of that study – MG Riley & Sec Woodley attention
    - Elasticity – shipper response surveys, Survey Model
    - Spatial – Global Grain Model, Regional Routing Model
    - Demand management – UMStL, Sweeney, & NaSS,
  - Secondary attention
    - deep draft – HarborSym & possibility of Container Model
    - Ohio system – coal survey, WAM, incorp elas in ORNIM
- Biggest impact – bringing academic community into the tent…gone from boondoggle to complex challenge

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NETS Presentation Themes:

- Background
- Teaming
- Communications
- Transition from Research to Development
- Independent Peer Review
- Accomplishments
- On-going Work
- Next Steps

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NETS Background

- NETS was started in FY03 in recognition of the need for additional capabilities for both deep draft and inland navigation economic analysis.
- NETS has received $2,844,018 through FY05
- The FY06 budget is $2,425,000 less S&S
- Total program budget through FY09 is $10,425,000
  - Assumes S&S is not restored, extending program into FY09.

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NETS Teaming

- NETS research focused on teaming with academic it first 1 ½ years.
- Now NETS is highly coordinated with the Planning Centers of Expertise for Inland (PCXIN) & Deep Draft Navigation (DDPCX).
  - Wes Walker – Huntington
  - Ken Claseman – Mobile
- We have researchers from 7 Universities, Contractors, CX personnel, HQ and ASA personnel to assist IWR with this task.

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NETS Communications

- Presentations made on NETS research:
  - Transportation Review Board Annual Meeting
  - Assistant Secretary of the Army (Woodley)
  - National Academy of Science Upper Mississippi Review Team
  - International Industrial Organization Conference
  - UMR-IWW Economic Coordination Committee
  - MARC 2000 Annual Meeting
  - PIANC
  - Numerous briefings to General Riley and HQ staff on NETS
- Launched NETS web site and the NETS News monthly news letter
- - NETS News is distributed monthly.
- NETS brochure
- NETS table top display for conferences

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Developing State-of-the-Art Tools and Techniques for Economic Modeling & Analyses to Help Meet Tomorrow's Navigation Challenges
The U.S. Army Corps of Engineers is committed to spending the nation's tax dollars wisely by investing in navigation projects that provide the best value for the dollar long term. The Navigation Economic Technologies (NETS) program supports this mission by developing independently-verified economic models, tools and techniques.
Our web site is designed to provide the latest information on the NETS team, the issues we are addressing, the approaches we are using and the status of our activities. The NETS bookshelf contains final reports and policy guidelines, while the toolbox holds final instruments, models, etc. that result from our research. For regular updates on our progress, sign-up for NETS News, a monthly e-newsletter delivered directly to your inbox.
www.corpsnets.us

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NETS Transition from R to D

- The Mid-America Grain study was the first successful effort to estimate “elasticity” or what we call shipper response.
- Rich Manguno is working to incorporate these results into an “Essence” type model – “The Survey Model”
  - This will give the Upper Miss team an “existing condition” model.
- The final draft of the “Global Grain Flow Forecast Model” is completed and going through Independent Peer Review. Rich Manguno will incorporate the most likely scenario into the Survey Model.
  - This will give the Upper Miss team a “without project future condition model”
- We are working with the PCXIN to incorporate shipper response (elasticity) into ORNIM & the Navigation System Simulation Model.

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NETS Independent Peer Review

- An independent peer review process has been established and is being followed for critical research.
  - A list of experts is maintained by the contractor. This list is by area of expertise.
  - When a study is to be reviewed, IWR submits the product and identifies the areas of expertise needed to evaluate the effort.
  - The contract randomly selects from the list and contracts for review. The contractor manages the review.
  - Comments are then submitted anonymously from the contractor to IWR.
- The Mid-America Grain study was the first effort to go through this review process.

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NETS Accomplishments

- Published over 20 papers at conferences, TRB and the NETS web site.
- Released the HarborSym widening analysis model for field testing and review.
  - Begun extension to include deepening analysis
- Conducted surveys to estimate shipper response on the Mississippi and Columbia. Initiated efforts to conduct surveys on the Ohio in FY06.
- Concluded studies on “Appointment Systems” and “Tradable Permits”
- Published the final draft of the Global Grain Flow Forecast Model. This is a global “spatial equilibrium” model as recommended by the NAS.
- Completed Event studies of the Greenup and McAlpine closures.
- Advanced the theory of transportation economics by publishing 3 theoretical paper.
- NETS Symposiums involving academics, government reps, contractors and Corps

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NETS Ongoing Work

- Transitioning research to Upper Mississippi study team
- Navigation System Simulation Model – Design Document
- Container Forecasting Model – Existing Market and Flows
- Ohio River Shipper Response Survey – Coal and Non coal
- Upper Mississippi Shipper Response Survey – Grain and Non grain
- HarborSym deep draft development
- HarborSym training – Sponsored by the DDPCX
  - Jacksonville – Tampa Harbor
  - Galveston - Sabine-Neches Waterway
- Regional Routing Model

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NETS Ongoing Work (cont)

- WAM BPP - This PCXIN tool is being modified to increase ease of use and develop a users manual. Two people left in the Corp know how to use it.
- Simulation Animation – This greatly increases the analyst ability to understand how the model is working and to communicate that to reviewers and stakeholders.
- Economics of Deep Draft Vessel Operations
  - Fleet Forecast
    - Global Insight
  - Vessel Load Factor Analysis
    - Better estimates of future vessel draft
  - Vessel Power and Bunkering Consumption Analysis
    - Currently limited to “at sea” & “at port”
  - Under-keel Clearance Verification
    - Teaming with ERDC CADET model

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NETS Next Steps

- Work with Planning Center of Expertise for Deep Draft Navigation to certify HarborSym widening model
- Work with Planning Center of Expertise for Inland Navigation to incorporate shipper response in the ORNIM suite of tools with the goal of certifying the model
- Work with Planning Center of Expertise for Inland Navigation to develop the NaSS model.
    - -Teaming with ERDC to incorporate component reliability
- Evaluation of externalities to the hinterland

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NETS Next Steps – (cont)

- Develop “corporate” forecasting models for containers, petroleum and coal.
    - This may include certifying a private sector model if appropriate
- Conduct additional event studies (Hannibal Lock and Dam)
- With the completion of the NaSS model we will be able to evaluate congestion pricing, lockage efficiency measures and alternative locking policies

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Post NETS

- NETS took us through Research, taking us through Development -- post NETS complete the D and begin the Application
- Do we have ability to move from development to application?
  - Maintenance of models and data
  - Funding -- typically, planning project funds finished the job
  - O&M application – will funds be available to field these models in order to support operations
    - Planning work activities
    - Budget support
- Will economic R&D be able to compete for R&D dollars?
- Who will be the proponents?

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What is needed? Priorities

- Competition between engineering, environmental and economics for R&D dollars within the Corps
- Where does Economic R&D need to go?
- What are the Economic priorities?
  - Who sets them? Process?
    - IWR, HQ planning
    - PCXIN, DDPCX, stakeholders (Great Lakes, inland rivers for all regions)
  - How are these interests brought together – how is Hofseth's vision of field-driven R&D accomplished?
- How are these priorities advanced?

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What is needed? R&D Suggestions

- Tie-up the loose ends from NETS mentioned previously
- Continue focus on development & application
- Adapt & apply tools to Navigation Business Line O&M needs
  - Operational efficiencies (smartlock to simulation modeling of planned closures) – WAM BPP and NaSS
  - Annual budget support – GLOPM, ORNIM, other basins?
  - Asset mgmt, Five year plans - Navigation Stewardship – application of ORNIM to major systems of locks & dams, system model for GL system of ports
- Data
  - Basic data quality – LPMS, WCS – support automation, evolution to use of AIMS & new technologies
  - Enhanced data – off river origins/destinations
  - New data – shipper response, engineering reliability -- entire ORS, GLNS, and other basins?

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What is needed? R&D Suggestions (cont.)

- Model application
  - Documentation, user manuals, training
  - Guiding through real world test
- Regional effects
  - Commodity values updated
  - Outreach profiles extended nationally
  - Regional establishment of impact assessment
- Nonstandard benefits
  - Emissions and highway congestion
- Integration of environmental inputs with engineering, economics

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What is needed? Institutionally

- Definition of roles – HQ Navigation Business Line mgr, HQ Planning & O&M, IWR, PCXIN, DDPCX,and field O&M
  - Maintenance of models – updating forecasting models in particular
  - Maintenance of data that feeds models – shipper response, engineering reliability and the standard data
  - Forwarding the R&D agenda
- Definition of scope – national, major regions
- Funding
  - Predictability
  - Sources
    - Districts
    - National GI R&D budget
    - Funding to regional university centers
    - Annual GE stipend
- These elements need to come together – is the PCX Program Management Plan the right place?

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Discussants

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